

BOOK REVIEW

Lichen Flora of the United States¹

The long anticipated posthumous publication of Professor Bruce M. Fink's "The Lichen Flora of the United States," completed by Mrs. Joyce Hedrick Jones, research assistant at the University of Michigan Herbarium, provides a valuable guide for the increasing number of students of this hitherto neglected department of botany. It is the only American work to cover the entire United States since Professor Edward Tuckerman's "North American Lichens," published in 1882.

This new Lichen Flora must be a part of the library of every serious student of these fascinating plants. Nevertheless, it does not seem to be the final and authoritative guide to American lichens which we had hoped it might be. It seems to us that it does not take sufficient account of the publications of other American workers, especially on the Cladoniae, to which we have given most attention, and which are most interesting to beginners in this field of botany. It is understood that the compiler of Prof. Fink's material, left at his death in 1927, was under some restraint on the part of the Department of Botany at the University of Michigan, as to admission of new species, and that only such material of these species as passed through her hands was admitted to the new book. This was a handicap to a complete presentation of the Cladoniae, for much of the recent extensive field work, and discovery of forms reported for the first time in North America, and based on determinations by Vainio, Sandstede and other eminent European lichenists, and published in American botanical journals, occurred after Professor Fink's death.

The treatment of the Cladoniae is a great improvement over that in the "Lichens of Minnesota," and covers the country much more fully. But it rarely goes beyond the species, and takes little account of varieties, forms and modifications, fixed by Vainio and Sandstede, adopted by the recent American workers. Take some examples: *Cladonia papillaria* is given without any forms, the differences in structure being given in the description

¹ *The Lichen Flora of the United States*. Bruce Fink, late Professor of Botany, Miami University, completed for publication by Joyce Hedrick, University of Michigan. X plus 426 pages, 46 plates. University of Michigan. 1935. \$4.00.

of the species. But the clearly differing forms, *papillosa*, *stipata* and *molariformis*, named by European authors, and adopted by Robbins and Blake and Evans, found wherever the species occurs, are so useful in separating them, that such differentiations seem a necessity. Or, another example, *Cladonia cristatella*. This work gives the species, and only two varieties, *paludicola*, which was long ago separated from *C. cristatella*, by European authors, and is now reduced to synonymy, for *C. incrassata*; and *densissima*, which is based apparently on one specimen found on a fence post near Oxford, Ohio, which seems near Robbins f. *squamosissima*. Yet Evans, in his *Cladoniae* of Connecticut (1930) found ten forms of *C. cristatella*, named by Tuckerman, Vainio, Robbins, and Merrill, some of them sixty years ago, which seem valid and essential in any complete treatment of the genus in America.

Incomplete study seems to have been given to the KOH reactions on species of *Cladoniae*. In the key, several species are mentioned as "KOH plus," but the color reaction is not stated. In *C. subcariosa*, no mention is made of any reaction, although the prompt yellow, then red reaction on this species is its most helpful determinant, among other species somewhat resembling it. KOH reactions are not mentioned for *C. rangiferina*, *tenuis*, *alpestris*, *floridana*, *santensis* and *cariosa*, though all have been recorded, for some years, by other American and European students. Such lack of completeness lessens the value of this book and makes it necessary for us to continue to use other works; Evans, Robbins and Blake, Annie Lorain Smith and Lindau, for such chemical reactions.

The treatment of foliose and crustose lichens, seems to be very helpful. Some of the illustrations are taken from the "Lichens of Minnesota," and a few are new, but there should be more of them. Some of the fine photographs by Prof. Fink in issues of the *Bryologist*, in the years 1905-1910, would merit inclusion in such a work as this.

This book will be helpful to lichen students and will increase interest in the subject. But, from comparison with other work in this field, especially the European authors, and American workers on particular genera, it seems just to say that the authoritative Manual of American Lichens has yet to be issued.

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